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IN THE UNITED STATES PATENT & TRADEMARK OFFICE

IN RE APPLICATION OF :
KARL OTT, ET AL. : EXAMINER: GRESO, AARON J.
SERIAL NO: 10/591,662 :
FILED: SEPTEMBER 5, 2006 : GROUP ART UNIT: 1726
FOR: NOVEL SOLVENT FOR :
PRODUCING POLYURETHANE :
DISPERSIONS :

REPLY BRIEF

COMMISSIONER FOR PATENTS
ALEXANDRIA, VIRGINIA 22313

Commissioner:

In response to the Examiner's Answer dated January 10, 2012, please consider the following remarks:

The Examiner's logic in support of the rejection of Claims 15-22 and 24-25 is technically inconsistent and is manipulated in hindsight of the claimed invention. Moreover, the Examiner discounts the showing of unexpected results with reasoning which is counter to his own statements.

Pears describes two sets of solvents, each set being identified for a different purpose. On page 4, lines 30-32, organic solvents suitable to mix with the condensation polymerization reaction step for the purpose of viscosity adjustment are described. Examples of a preferred water miscible solvent as described by Pears include N-methylpyrrolidine, dimethyl sulphoxide and methyl ethyl ketone.

The Examiner cites Argabright as evidencing these examples as aprotic solvents and appears to assert that because both N-methyl- and N-ethylpyrrolidine are listed by Argabright in a list of solvents suitable for his chemistry, the two solvents would also be equally suitable for use in the Pears chemistry.

Pears is silent with respect to aprotic solvent. The solvents listed by Argabright are **high dielectric** aprotic solvents to be employed in reaction of an organic halide with an alkali cyanate in the presence of an alcohol. Thus the Argabright chemistry is distinctly different from that of Pears. Neither methyl ethyl ketone nor any dialkyl ethers of a glycol acetate are listed by Argabright as high dielectric aprotic solvents. Therefore, the Argabright list provides solvents for a different chemistry and does not evidence suitability or equivalency for the purpose described by Pears.

The second list of solvents described by Pears discloses cosolvents to be mixed with water in preparation of an ink (page 7, lines 16-34). Criteria for selection of a solvent for preparation of an ink are significantly different than those of a cosolvent for a reaction medium. In an ink properties such as surface tension, composition stability and drying time are important, whereas such properties would not be considered in the condensation polymerization.

Therefore, the Examiner's conclusion that the two Pears lists are in fact interchangeable is technically incorrect and his logic as a basis for *prima facie* obviousness erroneous.

The Examiner then employs a "homologous series" relationship with regard to N-methyl and N-ethylpyrrolidone (page 6, lines 15-19) as a basis for rejection. However, in his support of case law he includes "absent unexpected or unobvious results."

In this regard, the declaration by Dr. Karl Häberle shows that polyurethane dispersions of the same components, differing only that the comparative example was reacted

in N-methylpyrrolidone, whereas Examples 1 and 2, according to Claim 15, were reacted in N-ethylpyrrolidone and N-cyclohexylpyrrolidone, show unexpectedly different performance with respect to steam resistance. The results are again shown in the following Table.

Example	Evaluation of Steam Resistance
Comparative	(2) film is severely discolored
Example 1	(0) film shows no change
Example 2	(0) film shows no change

The improvement in steam resistance obtained with the polyurethane dispersions according to Claim 15 is significant and demonstrates a useful performance advantage in coating applications such as described on page 16, lines 13-19, in the specification.

Such showing is clearly unexpected as according to a homologous series relationship as expounded by the Examiner, a significant difference would not be expected. Moreover, in response to the showing of unexpected results, the Examiner states (Examiner's Answer, page 12, lines 12-15):

. . . the fact that applicant has recognized that non-claimed steam resistance is improved due to the alleviation of discoloring . . . is not taken as requiring that a homolog would not be expected to function as a a-protic solvent when applied as similar homolog material for the application taught by Pears.

Such logic is irrelevant to rebuttal of a *prima facie* case of obviousness by a showing of unexpected results. Pears does not disclose utility of N-ethyl- or N-cyclohexylpyrrolidone as reaction solvents. Pears does disclose the use of N-methylpyrrolidone. The Table above compares results obtained with all three materials and shows unexpected and superior performance obtained according to the invention of Claim 15 over the disclosed Pears method. Function as an aprotic solvent is a concern only of the Examiner and has no relevance to obviousness of the present invention. The Examiner has clearly misapplied the case law in making the statement shown above.

CONCLUSION

In view of the foregoing remarks and the remarks set forth in the Appeal Brief filed November 1, 2011, Appellants respectfully request that the rejections pending in the Final Office Action of August 22, 2011, be reversed.

Respectfully submitted,

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